Agenda

1. Transportation Analysis Report

2. Transportation Themes from the Public Hearing

3. Proposed Transportation Chapter

4. Preview of Compact Growth Chapter
Transportation Analysis Report
Key Questions

• How could the County be impacted by ongoing trends related to the economy, climate change, demographics, technology, and lifestyle choices?

• Do these trends support the County’s vision for the future, or are policy interventions needed to achieve the County’s vision?
Analysis Approach

• Evaluate Impact of External Factors
• Evaluate Impact of Thrive Montgomery Policies
Alternative Futures
Why Alternative Futures?

• Our world is rapidly changing.
• Projecting past trends forward is insufficient.
• Alternative futures enable us to evaluate very different futures.

Drivers of Change

Economic Disruptions – Climate Change – Demographic Changes
Technological Innovations – Changes in Lifestyle
2050 Scenarios

• Business as Usual
• Alternative Futures
  • On the Road
  • Work Local, Play Local
  • Home Alone, Together
  • Hello from the Other Side

Economy fueled by outside business attraction

Technology enables travel

On the Road

Work Local, Play Local

Hello from the Other Side

Home Alone, Together

Technology replaces travel

Economy fueled by organic growth & entrepreneurship
2050 Scenarios

- Business as Usual
- Alternative Futures
  - On the Road
  - Work Local, Play Local
  - Home Alone, Together
  - Hello from the Other Side

Economy fueled by outside business attraction
Technology enables travel
Technology replaces travel
Economy fueled by organic growth & entrepreneurship
On the Road

Residents live in less dense areas and commute longer distances to work.

- Technological Innovation: people make 25% more trips due to technologies autonomous vehicles that make travel easier.
- Economic Disruption: people make longer trips because jobs are focused on specific industries.
- Employment Condition: employment growth is much more concentrated in areas with existing office jobs.
- Living Preference Condition: household growth is shifted to less dense locations.
- Climate Change: development removed from the 500-year flood plain.
Home Alone Together

Residents live in more dense locations and can telework at increased rates, while shopping, enjoying entertainment, and eating locally

- Technological Innovation: people make 25% fewer trips, due to technologies such as teleworking / virtual reality that replace trips.
- Economic Disruption: people make shorter trips because employment is growth is in a variety of industries.
- Employment Condition: employment growth is concentrated in areas with existing office jobs.
- Living Preference Condition: household growth is shifted more dense locations.
- Climate Change: development removed from the 500-year flood plain.
Metrics

- General Findings
- Non-Auto Driver Mode Share (NADMS)
- Vehicle Miles Traveled (VMT)
- Travel Time
- Job Access
Metrics: Equity Analysis

Equity Emphasis Areas (EEA):

• concentration of individuals identified as low-income that is more than 1.5 x the regional average, or
• high concentrations of 2+ minority population groups, and/or
• high concentrations of 1+ minority population groups combined with low-income concentration at or above the regional average.
2050 Modeling Approach

- Land use changes
  - Complete communities
  - Concentration of growth in transit areas

- Transportation changes
  - Converting traffic lanes to transit lanes on BRT corridors
  - Implementation of premium transit (BRT, MARC)
  - Improving local bus service (frequency)
  - Reducing parking capacity and increasing parking pricing
  - Increase auto travel pricing and affordability
  - Improve street network/block density
General Findings
Average Person Trips per Weekday

External Factors + Thrive Montgomery Policies = Total Change

2015 = 3.2-million-person trips per weekday
Average Person Trips per Weekday

External Factors  +  Thrive Montgomery Policies  =  Total Change

-9%  23%  13%  13%  14%  70%  36%  5%

2015 = 3.2-million-person trips per weekday

80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
-20%

On the Road  Business as Usual  Home Alone Together
Average Person Trips per Weekday

External Factors + Thrive Montgomery Policies = Total Change

- On the Road
- Business as Usual
- Home Alone Together

2015 = 3.2-million-person trips per weekday
Average Person Trips per Weekday

External Factors + Thrive Montgomery Policies = Total Change

-9% 23% 13% 13% 14% 70% 36% 5%

On the Road Business as Usual Home Alone Together

2015 = 3.2-million-person trips per weekday
Average Person Trips per Weekday

External Factors + Thrive Montgomery Policies = Total Change

2015 = 3.2-million-person trips per weekday

-20% -9% 0% 20% 40% 60% 80%

On the Road Business as Usual Home Alone Together

-20% -9% 0% 20% 40% 60% 80%

On the Road Business as Usual Home Alone Together
Average Person Trips per Weekday

External Factors + Thrive Montgomery Policies = Total Change

-9% 23% 13% 13% 14% 70% 36% 5%

2015 = 3.2-million-person trips per weekday

On the Road  Business as Usual  Home Alone Together

Thrive Montgomery 2050 – Worksession #4
Average Vehicle Trips per Weekday

- External Factors: 37%
- Thrive Montgomery Policies: 17%
- Overall Change: 33%

2015 = 2.3 million vehicle trips per weekday
Non-Auto Driver Mode Share

Share of person trips for which the individual traveler is not the driver of an automobile
Non-Auto Driver Mode Share (NADMS)

External Factors

- On the Road: 6.3%
- Business as Usual: 4.2%
- Home Alone Together: 2.1%

Thrive Montgomery Policies

- On the Road: 4.1%
- Business as Usual: 0.4%
- Home Alone Together: 0.4%

Total Change

- On the Road: 6.7%
- Business as Usual: 8.3%
- Home Alone Together: 2.5%

2015 = 41 percent
Vehicle Miles Traveled
Total daily miles traveled by motor vehicles
**VMT: Trips Starting or Ending in Mont Co**

- **External Factors:**
  - 41.6%
  - -3.2%

- **Thrive Montgomery Policies:**
  - 18.7%
  - -5.1%
  - -6.0%
  - -3.7%

- **Overall Change:**
  - 36.5%
  - 12.8%
  - -6.9%

2015 = 20.2 million vehicle miles traveled per day

- **On the Road**
- **Business as Usual**
- **Home Alone Together**
Travel Time Analysis

Time spent traveling by transit or auto
Change in Average Travel Time per Auto Trip

External Factors
- Thrive Montgomery Policies
- Total Change

On the Road
- Business as Usual
- Home Alone Together

2015 = 18 minutes per auto trip
Change in Average Travel Time per Transit Trip

2015 = 50 minutes per transit trip
Job Access

Average Jobs Accessible within 45 minutes
Auto Access to Montgomery County Jobs

External Factors

Thrive Montgomery Policies

Total Change

2015 = 90 percent of local jobs

<table>
<thead>
<tr>
<th></th>
<th>On the Road</th>
<th>Business as Usual</th>
<th>Home Alone Together</th>
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<tbody>
<tr>
<td>External</td>
<td>-9%</td>
<td>3%</td>
<td></td>
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<tr>
<td>Thrive</td>
<td>-9%</td>
<td>-7%</td>
<td>-2%</td>
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<tr>
<td>Montgomery</td>
<td>20%</td>
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</tr>
<tr>
<td>Policies</td>
<td></td>
<td>-16%</td>
<td>-8%</td>
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<tr>
<td>Total Change</td>
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</table>
Transit Access to Montgomery County Jobs

External Factors

-2%
-10%
-20%
-30%

Thrive Montgomery Policies

6%
11%
5%

2015 = 12 percent of local jobs

Total Change

10%
10%
10%

2015 = 12 percent of local jobs

- On the Road
- Business as Usual
- Home Alone Together

Thrive Montgomery 2050 – Worksession #4
Equity Analysis
Average Travel Time per Trip by Mode

Average Travel Times per Auto Trip

- On the Road: 23.4 minutes (EEA), 22.6 minutes (non-EEA)
- Business as Usual: 21.4 minutes (EEA), 21.7 minutes (non-EEA)
- Home Alone Together: 19.2 minutes (EEA), 18.4 minutes (non-EEA)

Average Travel Times per Transit Trip

- On the Road: 49.2 minutes (EEA), 50.2 minutes (non-EEA)
- Business as Usual: 46.8 minutes (EEA), 48.1 minutes (non-EEA)
- Home Alone Together: 46.1 minutes (EEA), 46.6 minutes (non-EEA)
Overall Travel Time per Trip

### External Factors

<table>
<thead>
<tr>
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<th>EEA</th>
<th>Non-EEA</th>
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<tbody>
<tr>
<td>On the Road</td>
<td>27.5</td>
<td>25.5</td>
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<tr>
<td>Business as Usual</td>
<td>29.2</td>
<td>23.1</td>
</tr>
<tr>
<td>Home Alone Together</td>
<td>21.0</td>
<td>21.0</td>
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</table>

### External Factors & Thrive Montgomery Policies

<table>
<thead>
<tr>
<th></th>
<th>EEA</th>
<th>Non-EEA</th>
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</thead>
<tbody>
<tr>
<td>On the Road</td>
<td>25.6</td>
<td>25.3</td>
</tr>
<tr>
<td>Business as Usual</td>
<td>24.8</td>
<td>24.8</td>
</tr>
<tr>
<td>Home Alone Together</td>
<td>22.8</td>
<td>20.9</td>
</tr>
</tbody>
</table>

- EEA: 1.9 min longer
- Non-EEA: 0.4 min longer

- EEA: 1.9 min longer
- Non-EEA: 0.1 min longer

- EEA: 1.9 min longer
- Non-EEA: 2.9 min longer
VMT per Square Mile

External Factors

- Thrive Montgomery Policies

Overall Change

- On the Road
- Business as Usual
- Home Alone Together

2015 =
152,000 in EEAs
39,000 in non-EEAs
Conclusions
Comparison to Purple Line Project

<table>
<thead>
<tr>
<th></th>
<th>Reduction in VMT</th>
<th>Reduction in Vehicle Trips</th>
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<tbody>
<tr>
<td>Thrive Montgomery</td>
<td>1,200,000</td>
<td>230,000</td>
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<tr>
<td>(2015 – 2050)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purple Line</td>
<td>129,828</td>
<td>16,790</td>
</tr>
<tr>
<td>(2010 – 2040)</td>
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</tr>
</tbody>
</table>

Source: Purple Line, FEIS, Volume 1, page 3-11 to 3-12
Land Use

Population:

- **2015**:
  - Downtowns, Town Centers, Transit Corridors: 28%
  - Municipalities: 59%
  - Suburban & Rural: 0%

- **2050 Existing Policies**:
  - Downtowns, Town Centers, Transit Corridors: 32%
  - Municipalities: 52%
  - Suburban & Rural: 25%

- **2050 Thrive Montgomery Policies**:
  - Downtowns, Town Centers, Transit Corridors: 36%
  - Municipalities: 48%
  - Suburban & Rural: 14%

Employment:

- **2015**:
  - Downtowns, Town Centers, Transit Corridors: 44%
  - Municipalities: 28%
  - Suburban & Rural: 0%

- **2050 Existing Policies**:
  - Downtowns, Town Centers, Transit Corridors: 47%
  - Municipalities: 29%
  - Suburban & Rural: 29%

- **2050 Thrive Montgomery Policies**:
  - Downtowns, Town Centers, Transit Corridors: 51%
  - Municipalities: 24%
  - Suburban & Rural: 21%
Land Use

Consider additional policies to shift existing population and jobs from suburban communities to downtowns, town centers and transit corridors.
Teleworking

Post COVID-19:

• 50% of employers anticipate a higher level of teleworking.
• 20% of employers anticipate teleworking at pandemic levels.

Source: MWCOG Survey, September 2020
Teleworking

Pursue an effort to maintain an elevated level of teleworking, while seeking to offset some of its negative economic and social impacts
Travel and Parking Pricing

Future studies are needed to determine appropriate travel and parking charges.
Questions?
Themes from the Public Hearing
Themes from the Public Hearing

• Public Transit
• Walking and Bicycling
• Start planning for people instead of planning for cars
• Reduction in parking
• Inequities in the transportation network
Proposed Transportation Chapter
Organization

• Part 1: What is the problem we are trying to solve?
• Part 2: What policies are going to solve those problems and further the key objectives of Thrive Montgomery?
• Part 3: How will these policies achieve this?
• Part 4: How will we know we are making progress?
The Problem: Auto-Oriented Transportation

Non-Auto Driver Mode Share

Source: Montgomery County Trends: A Look at People, Housing, and Jobs Since 1990
The Problem: Economic Health

Average Commute Time (minutes)

Source: Montgomery County Trends: A Look at People, Housing, and Jobs Since 1990
The Problem: Equity

Fatality rates per 100,000 Population

- All Traffic Deaths
- Pedestrians
- Vehicle Occupants

- Hispanic
- Black or African American
- White
The Problem: Environmental Resilience

Montgomery County 2018 Greenhouse Gas Inventory

Source: Montgomery County Climate Action Plan, Public Draft
Part 2: What policies are going to solve the problems?

- Develop a safe, comfortable and irresistible walking and bicycling network.
- Build a world-class transit system:
- Adapt policies to reflect the economic and environmental costs of driving alone.
- Develop and extend advanced communications networks.
Part 2: What policies are going to solve the problems?

Develop a safe, comfortable and irresistible walking and bicycling network:

- **Expand the street grid** in downtowns, town centers, transit corridors, and suburban centers of activity to create shorter blocks.

- Convert existing traffic lanes and on-street parking to create space for walkways, bikeways and street buffers with landscaping and street trees.

- **Prioritize the provision of safe, comfortable and attractive sidewalks, bikeways, roadway crossings**, and other improvements to support walking, bicycling, and transit usage in capital budgets, development approvals and mandatory referrals.

- Transform the road network by incorporating complete streets design principles with the goal of **eliminating all transportation-related roadway fatalities and severe injuries** and supporting the emergence of more livable communities.
Part 2: What policies are going to solve the problems?

Build a world-class transit system:

• Build a network of rail, bus rapid transit and local bus infrastructure and services that make transit the fastest, most convenient and most reliable way to travel to centers of economic, social and educational activity and opportunity.

• Convert existing general purpose traffic lanes to dedicated transit lanes.

• Prioritize transportation investments that connect historically disadvantaged people and parts of the county to jobs, amenities, and services.

• Ensure safe and comfortable access to transit stations via walking and bicycling.
Part 2: What policies are going to solve the problems?

Adapt policies to reflect the economic and environmental costs of driving alone:

• Employ **pricing mechanisms**, such as congestion pricing or the collection and allocation of tolls to support walking, biking and transit.

• **Manage parking efficiently** by charging market rates and reducing the supply of public and private parking.

• Encourage the **proliferation of non-polluting vehicles** by upgrading government fleets and requiring appropriate infrastructure.
Part 2: What policies are going to solve the problems?

Develop and extend advanced communications networks:

• Facilitate **construction of high-speed fiber optic and wireless infrastructure** and other information and communication technology to supplement transportation links with improved virtual connections.

• Focus investment in communications infrastructure and services to **connect people and parts of the county that lack convenient access** to jobs and educational opportunities.

• **Support teleworking** by accelerating deployment of information and communications technology and making working from home easier by facilitating Complete Communities.
Part 3: How will these policies achieve this?

- Improve the **equity** of our transportation system by providing world class walking, bicycling and transit networks that will increase access to jobs and other opportunities, eliminating pollutants from our vehicles and by converting high-speed suburban arterials to safe and comfortable multimodal boulevards.

- Support **economic health** by offering residents and employees a menu of choices that make all forms of travel effortless and enjoyable, provide reliable travel times and redevelop parking lots to more productive uses.

- Enhance **environmental resilience** by providing irresistible alternatives to driving and by reflecting the environmental cost of driving to reduce vehicle miles traveled, while constructing a fine grain grid of streets, especially along our suburban corridors, to provide redundancies in our transportation network.
Part 4: How will we know we are making progress?

- Vehicle Miles Traveled (VMT): Down
- Non-Auto Driver Mode Share (NADMS): Up
- Person Trip accessibility for walking and cycling: Up
- Number of traffic-related severe injuries and fatalities: Down
- Transportation system’s GHG emissions: Down
- Miles of auto travel lanes per capita: Down
- Teleworking: Up
- Motor vehicle parking per unit of development: Down
Outline of Compact Growth Chapter
Organization

• Part 1: What is the problem we are trying to solve?
• Part 2: What policies solve the problem?
• Part 3: How will these policies further the key objectives of Thrive Montgomery 2050?
• Part 4: How will we evaluate progress?
Part 1: What is the problem?

• The county has not used land efficiently, resulting in the dispersal of development and infrastructure as well as the decline of land available for agriculture, recreation and environmental stewardship.
Part 2: What policies solve the problem?

- Concentrate growth along corridors through compact infill development and redevelopment.
- Prioritize public investment in infrastructure along growth corridors and leverage it to attract future private investment in a compact form.
- Limit growth beyond corridors to compact, infill development and redevelopment in Complete Communities.
- Preserve and enhance the Agricultural Reserve and manage the areas within the rural pattern of development for the benefit of the entire county.
Part 3: How do polices further objectives?

• Compact, corridor-focused growth will allow the county to:
  • Continue to grow and remain economically competitive, while also preserving land for farming, recreation and resource management.
  • Direct population, employment and investment to locations served by infrastructure, create centers of activity and increase access to housing, jobs and services.
  • Improve environmental sustainability of development, including reduction of greenhouse gas emissions.
Part 4: How will we evaluate progress?

• In future plans, projects and proposals related to the efficient use of land, several relevant measures will be used to assess progress.
Backup Slides
Average Vehicle Trip Distances

- **2015 = 8.8 miles**

<table>
<thead>
<tr>
<th>External Factors</th>
<th>Thrive Montgomery Policies</th>
<th>Overall Change</th>
</tr>
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<tbody>
<tr>
<td>On the Road</td>
<td>Business as Usual</td>
<td>Home Alone Together</td>
</tr>
<tr>
<td>3.2%</td>
<td>4.1%</td>
<td>5.4%</td>
</tr>
<tr>
<td>1.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2%</td>
<td></td>
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</tr>
<tr>
<td>-0.4%</td>
<td></td>
<td>-1.7%</td>
</tr>
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</table>

**Thrive Montgomery Policies**

- **Overall Change**
  - On the Road: 2.7%
  - Business as Usual: 5.4%
  - Home Alone Together: 0.5%
VMT: Roads in Montgomery County

- 2015 = 24.1 vehicle miles traveled per day

External Factors
- On the Road: 37.6%
- Business as Usual: 20.5%
- Home Alone Together: 2.5%

Thrive Montgomery Policies
- On the Road: 31.4%
- Business as Usual: -6.2%
- Home Alone Together: -1.1%

Overall Change
- On the Road: 14.1%
- Business as Usual: -6.4%
- Home Alone Together: -3.7%

Overall Change: -1.1%
Auto Access to Regional Jobs

2015 = 28 percent of regional jobs

External Factors
Thrive Montgomery Policies
Total Change

On the Road
Business as Usual
Home Alone Together

-10%
-6%
0%
0%
-1%
0%
0%
-1%
-10%
-7%
-1%
Transit Access to Regional Jobs

- 2015 = 3 percent of regional jobs
## 2050 Scenarios

<table>
<thead>
<tr>
<th>Alternative Futures</th>
<th>On the Road</th>
<th>Work Local, Play Local</th>
<th>Home Alone, Together</th>
<th>Hello from the Other Side</th>
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<tbody>
<tr>
<td>Technological Innovation</td>
<td>Tech enables travel</td>
<td>Tech enables travel</td>
<td>Tech replaces travel</td>
<td>Tech replaces travel</td>
</tr>
<tr>
<td>Economic Disruption</td>
<td>Outside business attraction</td>
<td>Organic growth</td>
<td>Organic growth</td>
<td>Outside business attraction</td>
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<tr>
<td>Employment Condition</td>
<td>Much more concentrated</td>
<td>Much more concentrated</td>
<td>More concentrated</td>
<td>More concentrated</td>
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<tr>
<td>Living Preference Condition</td>
<td>Less urban</td>
<td>More urban</td>
<td>More urban</td>
<td>Less urban</td>
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<tr>
<td>Climate Change</td>
<td>Land use removed from flood plain</td>
<td>Land use removed from flood plain</td>
<td>Land use removed from flood plain</td>
<td>Land use removed from flood plain</td>
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## 2050 Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Land Use</th>
<th>Trip Generation</th>
<th>Trip Distribution*</th>
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<tr>
<td></td>
<td>Employment Concentration</td>
<td>Preference for Urban Living</td>
<td>Flooding</td>
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<tr>
<td>Home Alone, Together</td>
<td>+20%</td>
<td>+50%</td>
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</tr>
<tr>
<td>Hello from the Other Side</td>
<td>+20%</td>
<td>-50%</td>
<td>Reallocate</td>
</tr>
</tbody>
</table>

* Relative attractiveness of long-distance trips
Three Changes

• Land use
  • Living Preference: more urban or less urban
  • Employment Condition: more concentrated or less concentrated

• Trip Generation: number of trips produced by each household
  • Autonomous Vehicles → increase trip generation
  • Teleworking / virtual reality → reduce trip generation

• Trip Distribution: trip origins and destinations as reflected in trip length
  • Economy Condition: Outside business attraction → longer trips
  • Economy Condition: Organic business growth → shorter trips